In rating a soil for any limitations for dwellings, the emphasis is on its load-bearing capacity (for holding the foundation), slope, susceptibility to flooding, depth to seasonal high water table, and other hydrologic conditions. In rating a soil for limitations for roads, emphasis falls on its susceptibility to flooding, depth to seasonal high water table, texture, drainage, and ease of hauling and loading. In rating a soil for any limitations for septic tank filter fields, emphasis falls on its permeability, susceptibility to flooding, depth to water table, and slope.

The on-site disposal of septic tank effluent is a common soils problem throughout Kill Devil Hills. Many poorly drained and/or impermeable soils in the area are severely limited in their ability to accommodate septic tank effluent in a safe and sanitary manner. In some dry soils, such as dune sand, the soil is too permeable to accommodate effluent, leading to the potential for the pollution of ground waters and adjacent estuarine waters. When local officials know these problems exist, they can deal with them by adopting appropriate requirements for development, such as minimum lot sizes or centralized sewage treatment and disposal systems. Then, proper technical adjustments and innovations can often make development environmentally acceptable.

Recognizing the potential for groundwater pollution due to the proliferation of septic tank systems in Kill Devil Hills, the Town was one of four coastal North Carolina communities selected for study in the mid-1980s by the United States Environmental Protection Agency (EPA) concerning groundwater quality. This study, known as "The Impacts of Wastewater Disposal Practices on the Hydrogeology of the North Carolina Barrier Islands," established a number of test wells throughout Kill Devil Hills. Groundwater samples were taken quarterly and analyzed for the presence of a number of contaminates that could be traced to septic origins. Briefly summarized, the